

INFORMANT: TIM PAVEK

INTERVIEWER: STEVEN BUCKLIN

DATE: 20 MAY 1999

SB: [The interviewer Steven Bucklin]

TP: [The informant Tim Pavek]

[Beginning of side one, tape one]

[Interview begins]

SB: This is Dr. Steven J. Bucklin, Assistant Professor at The University of South Dakota Department of History, I'm conducting an interview on the 20th of May 1999 with Tim Pavek, p-a-v-e-k. We are at the Hotel Alex Johnson in Rapid City, South Dakota. Tim, your relationship to the missile business has been what?

TP: I went to work for the Air Force, at Ellsworth Air Force Base in late 1984 as a missile engineer, and our office was responsible for the maintenance of the 165 remotely located Launch Facilities and Launch Control Facilities, belonging to the 44th Strategic Missile Wing at Ellsworth.

SB: So you were a civilian employee of the Air Force?

TP: That's correct.

SB: And you are so today?

TP: Yes.

SB: And your position is GS11?

TP: I'm, I'm a GS11. The responsibility of keeping the missiles up evolved into one of deactivating them and I am currently the Minuteman II deactivation program manager in CE, in Civil Engineering at Ellsworth Air Force Base.

SB: Okay, where are you from originally, Tim?

TP: I was born in northeastern South Dakota, and moved out here before I started school and have basically lived in the Rapid City area for approximately forty plus years.

SB: And when you say before you started school, and that was school?

TP: Grade school.

SB: Uh-hmm. And you went through elementary, and junior high school and high school here in Rapid City. And where did you go to college?

TP: I attended college at the South Dakota School of Mines and Technology here, where I received a Bachelor of Science degree in Mechanical Engineering.

SB: So you're essentially a life-long South Dakotan?

TP: That is correct.

SB: Okay. Um, are you married?

TP: Yes.

SB: Children?

TP: Yes, I have a wife and four children. The eldest graduated from Tech with a Chem E degree last week and is getting married this next week. And I've got the next girl is going to Tech, and a boy who's a sophomore in high school. And I've got an eleven-year old who's a fifth grader.

SB: Well congratulations on the upcoming events in everyone's lives, that's great. Um, how did you become aware of the missiles before you were in the Air Force? Did you have knowledge of the missile wing in South Dakota?

TP: Probably my earliest recollections are my father was in the hardware business which is how we got out here, and I remember some amateur baseball teams we had here. There was the Chiefs, which was a Rapid City team here. And then Sturgis had the Titans. And that was named after a Titan missile site that was up there. And last I drove by that Titan, the model of the Titan missile is still visible from the interstate as you pass through Sturgis. And, but that was a very casual knowledge of there being missiles out here. I also remember from the hardware business that um, he had a case full of Stare tools and a Dymo tape marking machines. You're probably familiar with the plastic machines you punch out the plastic tape...

SB: Uh-hmm. For the names.

TP: To label things with. They've, they've gone mass marketing. But back then that was a rather new, sort of exclusive, product and very expensive at that point. But I vaguely recall him talking about this coming in and being used in, in the missile field where all the construction that was going in the early 60s. But I really didn't connect it with national defense activity in the

way I do now. It was just something that was going on here and had a big impact.

SB: You mentioned Titans. You want to tell us a little about the Titan missile?

TP: Well, the Titan missile was one of the Air Force's early efforts at an intercontinental ballistic missile that just immediately preceded the Minuteman. I think they were brought on line in about 1955. [Ed. Atlas-1955; Titan-1959] The Titans were put in here at Ellsworth in the end of the 50s, early 60s. Right around the turn of the decade there, and they overlapped the Minuteman. In fact, they were both in existence for just a short period of time. I think the Titans were only around a couple three years and then they were immediately phased out as they were superceded by the solid fuel Minuteman.

SB: Okay.

[Equipment check]

SB: You came to Ellsworth in 1984 as a missile facilities engineer. Can you tell us what the mission of a facilities engineer was?

TP: Yes. Um, our tasking was to provide the facility engineering, maintenance, trouble shooting improvement projects, repairs for the real property that supported the, the missile itself. Um, it was unique in the Air Force in that the Civil Engineering activity was tied so closely to the weapon system. They divided the weapon system into the aerospace ground equipment, or the operational ground equipment, and the RP, RPI or real property, real property installed equipment. And that line was very close, in fact in some cases it, it was blurred. So we worked real closely with our counterparts in the missile wing, their tech engineering, who did a similar type of activity for the missile itself and we then supported them with the electrical supply system, the structural facilities, the grounds and so forth.

SB: Did your duties entail visits to Launch Facilities?

TP: Um, yes. On occasion we would go out either look at a specific problem that needed to be addressed or look at general problems that might be subjects for repair, replacement, or modification on a fleet-wide basis.

SB: And would this mission also take you to Launch Control Facilities on occasion?

TP: Yes. Probably more often to the Launch Control Facilities. Um, the capsule crew in the Launch Control Capsule that was buried thirty-to-fifty feet below ground was, you know, a very important part of that and CE

were responsible for that capsule that they manned. So, things that we take for granted like a, the toilet, the sump pump, the water, electricity, were just as important to the mission as, as the, the key they had in the box. Because if all this didn't work they were useless.

SB: Well, that leads me to our next question, which is how seriously did you take your mission and your duties?

TP: Well, it was pretty difficult not to take it seriously. Because when you went out there, having gone through the initial security check being authorized under the Minuteman Entry Control System, filling out a daily dispatch, being checked at the gate, having to pass your authenticator to get down there it was pretty clear that this was a serious business.

SB: Were there any incidents that made it very clear that this was a serious business? We've talked to other interviewees about getting jacked up. Can you tell us a little bit about what it meant to get jacked up and if you ever were?

TP: Well fortunately I was but I wasn't here. And it was sort of an interesting story behind that. Um, jacked up is a, the slang for the process of being apprehended by the Security Police for potential unauthorized entry attempt. And normally that meant that you somehow did not properly identify yourself according to the pre-set procedures and the daily code and that particular page you were supposed to use. And when you were jacked up they didn't say "We're going to come and get you." They would say something like "Please exit the site and stand-by." And basically said, wait for the cops to come and pick you up. Well, you certainly wouldn't want to run 'cause they knew who you were, and so, you know, that never was an option. But the typical procedure then, if they wanted to do it by the book, would be to come up and tell you to most likely get up against the fence spread-eagle, or get down on the ground spread-eagle, and may involve some sort of a quick search and a quick verification of your I.D., and, and then probably a trip back to base, um because you'd most likely not be allowed that second attempt. And what, the one particular occasion I remember, I went out with a Facility Manager who was actually the superintendent of the shop. And so he was actually in charge of all the Facility Managers that ran the topsides. And we went out under his dispatch, which meant that he was responsible for authenticating and getting us on. And he screwed up both times and we got jacked up. But seeings how he hadn't gotten anybody irritated and the cops were in a good mood that day we didn't get the usual treatment. We got off lightly and ended up going back to base without having to lay down on the ground.

- SB: Now in the event that you weren't allowed to come back for that second opportunity when would be the next time you could go back?
- TP: Oh. You did get two opportunities but I'm not aware of being able to do it without going back to the base and getting a new dispatch.
- SB: Okay.
- TP: New codes or whatever. A new authorization.
- SB: Were there any limits to the amount of times you could screw up?
- TP: Not that I'm aware of. And I don't think it happened, you know, really frequently.
- SB: Um hmm.
- TP: But no, they went by the book because this was a you know, serious operation.
- SB: Yea, that brings me to the motto of the 44th, which was Aggressor Beware. And I wonder what your perception is of, of the missiles themselves and of the mission of the 44th?
- TP: Well I don't know how far that motto goes back, but it's sort of on the coat-of-arms or on their, on the wing shield. And I think it's fairly fitting when you look at the mission and that was one of deterrence. And so certainly deterrence involves a show of strength, and letting the your potential adversary know how strong you are and what the consequences would be. And so that I guess to me aptly describes what they were trying to do. And if I recall correctly, on that symbol, it's also a a diagram of a warhead surrounded by some circles and so forth, implicating the global nature of the business.
- SB: Um hmm.
- TP: So it's part of that heraldry that goes back to the, the Dark Ages and the knights of yore.
- SB: So as an element of the deterrent policy, then, did you see yourself, your mission, and the mission of the 44th as serving the interests of national security?
- TP: Oh, there was no, no question of that. That um, they served a, a real role in it. When you look at our defense policy that, you know, was embodied in the Triad, which consisted of the sea-launched ballistic missiles, the

land-based nuclear bombers, and land-based intercontinental ballistic missiles, so, you know, we were one leg of a three-legged stool. And um, very important. And, then to trickle it down, you know, you very often hear people say that everybody in the organization is important. You know, it's easy to look at the real visible people, whether it's the you know, the All-Star slugger or the president of this, the president of that. But really it gets down to, um , like I said, if the sump pump doesn't work and the capsule floods, this capsule is no good and it would go MICAP, or "mission incapable." So, literally, you could have a capsule that would be mission incapable and that's it could be that way for an inoperative toilet just as it could be for a computer that controlled the missile. So when you saw that go, go MICAP, or got a call late at night, or, or stopped by on the way home. On one occasion I stopped by a Launch Control Facility to look at something in particular, and I don't remember what, but the emergency shut off valve in the bottom of the capsule had been tripped, which meant the, the wastewater, the drain water, the sewage or whatever, was starting to back-up into the capsule. And I had my dress dress shoes on there and whatever, but you know, I crawled down there and sort of fished down through there and got that open and got that drained. If I wouldn't have done, they would have had to dispatch somebody from the base to send it out or else send the capsule crew out of there. So ...

SB: Which would have put one group down.

TP: Um hmm. One capsule down.

SB: Um hmm.

TP: And that was one-fifth of a squadron. And if there were five capsules that took two to launch, you took one out of that, then you were, you were starting to you know, cut into that ...

SB: And tell us how many capsules per squadron?

TP: Okay. Each squadron consisted of fifty missiles divided into flights of ten missiles each. Each flight of ten had one Launch Control Facility that was responsible for those ten missiles. And then within that squadron, of course, there were five of those Launch Control Facilities that shared the command and control capabilities for all fifty missiles in that flight.

SB: And there were three squadrons in the 44th?

TP: There were three squadrons here at Ellsworth. The 66th, 67th, and 68th. Um, the 165 sites occupied an area roughly 135 miles east-to-west and 100 miles north-to-south, stretching from the Wyoming line north of Belle Fourche up to Mud Butte, east to Faith, and then south down to

- Belvedere, which is slightly east of Kadoka, and then back along the interstate to Rapid City.
- SB: So this is a significant chunk of territory in western South Dakota.
- TP: That's right. It was variously described as thirteen-thousand-five-hundred square miles if you would place it in a rectangle.
- SB: Which is bigger than several states in the United States.
- TP: Yes.
- SB: Um, you know one other thing about the national interest and national security here. Did you have the feeling, or did other um members of the 44th and the people in the missile business, that you were defending other nations' security as well as the United States?
- TP: I guess I really never thought about it that way, but, you know, obviously we had the NATO countries and we had the Warsaw Pact countries, so, it was sort of an "us versus them." But that really never entered my mind.
- SB: Um hmm.
- TP: But, yeah. We were defending the world against communism, so in that respect, we were holding the bear at bay, so to speak.
- SB: So we were shouldering a significant responsibility for global peace, not just for United States security.
- TP: Oh, I think without a doubt. And obviously we still are today.
- SB: Okay. Did it ever bother you, the idea that these missiles were capable of destruction on a scale and scope that is almost beyond imagination?
- TP: Well, yeah. You really wondered whether, whether or not, but you, you had to recognize that here was the other side who had these awesome weapons and they had said, they had promised that they would bury us. So, when it comes down to "us versus them," people are forced to do a lot of things that might be against their nature. And you know, I remember when I was a, a little boy in bed here on a hot summer night with the windows wide open and I'd hear the distant rumble of the B-52s here at Ellsworth taking off. And, and almost lay in bed shaking wondering if that was a practice mission and they'd come back or if this was the real thing and within a few minutes we'd see the fireballs of, you know, nuclear weapons over western South Dakota. So, having lived next to this Air Force base, you know, we knew that we were a big red-and-white bull's

eye on the Soviet map, or that was my perception at the time. And um, so that was in the back of my mind that this could be the way that, you know, the world would end. And so it, it really wasn't a tough decision to, to become a part of deterring that from happening.

SB: Were you aware of what the missiles could do? Now, these were which type of Minutemen by the way?

TP: These were Minuteman II here at Ellsworth.

SB: And that meant that they carried what kind of warheads?

TP: They, they carried a single warhead, which was, you know, a larger warhead than some of the others. Um, so, yeah, I'd heard different briefings about things called "circular error probability," and, you know, how big it would be and how close they could hit and all that kind of stuff. And, and then you also heard, you know, as much from the news media as anything else, how much over-kill we had. So, there was never much question in my mind that, that nuclear war would pretty much be the end of the world as we know it.

SB: Did you, did you think the Soviet threat was real?

TP: Oh, without a doubt it was. Um, I, I'm no student of defense strategy, or our, whether or not what we thought they had and know now they didn't have, or any of that stuff, but there's no question in my mind that they were a threat.

SB: What kind of Minutemen did we have? Were there several different types?

TP: The, if I can digress just a little bit, that the Minuteman originally was brought on alert in 1961 at the height of the Cuban Missile Crisis at Maelstrom. And when the first flight of ten missiles was brought on line, over the next seven years, then, till about 1967, one thousand missiles were emplaced in individual silos in the Midwest here, stretching from Whiteman to North and South Dakota, Montana and Wyoming at the six bases. Over the years, then, the, the structure of those missiles changed. We went from Minuteman I to Minuteman II to Minuteman III to Peacekeeper. And at the time of, of the announcement of the Minuteman deactivation in 1991, the, the force structure consisted of four-hundred and fifty Minuteman IIs, um one hundred-fifty each at Whiteman, Missouri, Ellsworth Air Force Base, South Dakota, and Malmstrom, Montana. Then there were five hundred Minuteman IIIs based at Grand Forks and Minot with a hundred and fifty each fifty at Malmstrom Air Force Base, and one hundred at F. E. Warren. And then there was fifty Peacekeepers, which is the ten warhead MX missile, also at Francis E. Warren.

SB: And the Minuteman III carried how many warheads?

TP: The Minuteman III carried three warheads. The START Treaty, then, under which the Minuteman II was deactivated in, in uh '91 then President Bush announced his plan for peace. And in that speech, he called for the stand-down of our nuclear alert forces—the B-52s and so forth—and the Minuteman IIs. In seventy-two hours maintenance crews went out and safed those four hundred and fifty Minuteman IIs and they never came back on alert again.

SB: Two questions for our listeners, Tim, and that is would you tell us what “stand-down” is?

TP: Um, I assume that's a proper term, but I'll describe what alert means. Um, at Ellsworth, at the end of the runway, they have what they call the “Christmas Tree.” And that was a parking area for aircraft. And they were all sort of pointed toward the runway on opposing sides at an angle, so if you looked from the air it would look like branches of a Christmas tree. Those airplanes were loaded with, with weapons and the crews stayed in an alert facility so that they were ready to man the aircraft and take-off literally on minutes notice.

SB: And this was twenty-four hours a day, three hundred sixty-five days a year?

TP: Right. And even in the base theater, you'll see still today, signs on the front of the theater—“alert crew”—and there were special parking places outside to, if they were on alert for a week or ten days at a time, then if they were out at a movie as a crew together, if that sign flashed then, they, they would, uh immediately hop in the vehicles and rush to man their planes. So, that was the airplane alert mission. The missiles had an alert mission, but instead of being based on the base, the crews were in the capsules manning the communication system with their keys and codes locked in a red box, ready to turn their keys on almost literally a minute's notice. And, so basically, they were ready to deliver a nuclear weapon within approximately thirty minutes or less or the next is free.

SB: Free.

TP: That's as you've seen on the blast door at Delta One. So, having described the alert mission, then, the term “stand-down” would mean to, to pull back those forces from immediate alert, to instead of, you know, having everything loaded, ready to go, you know I would assume, put the weapons back in a weapons storage area, pull the planes back on the

- normal ramp, maybe still have them in reserve, but not have them on such a short leash.
- SB: And how would that translate to the missile crews then?
- TP: Okay. From the missile crew, then, that would mean that we would actually go out and safe the missiles.
- SB: That was my next question, is what does “safe” mean?
- TP: Okay. Which meant going out to the Launch Facility, literally inserting the key into a switch that would disconnect the system and not allow a launch vote, or not allow them to launch a missile. So that meant physically penetrating every site. Going through a significant process to get down in there, physically turn the key, and walk out.
- SB: Now this was at the Launch Facility?
- TP: That was at the Launch Facility. From the launch crew’s standpoint, it meant that they weren’t weren’t able to do what they had been trained to do. They had at least in the beginning, they still went out. They monitored the missiles, they monitored the security so no one stole ‘em, you know? They monitored so if, if something went down, you know, we could fix or, you know, not let the thing go to pot, but basically, they were unable to launch the missiles.
- SB: Now, in this seventy-two hour period, were the capsule crews pulled? Or do they continue to do their duty in the capsules?
- TP: Well actually, they continued to, to work for several months. In fact, some of them probably a couple years later. I’m not sure when the last ones went off, but they stayed until some point when they felt it secure enough that they didn’t need that monitoring. Because one of the functions of the capsule crew was to provide remote monitoring of the security of the site, both what they called Inner Zone and Outer Zone. One being just sort of a motion detector on the top side and the other indicating a more likely intent to get into the site itself.
- SB: Okay. As an engineer you might have an opinion about the relative value of Soviet weaponry versus American weaponry. Was this something that was discussed? Did you have a sense of superiority or inferiority on one side or the other?
- TP: Not from any scientific or specific knowledge. Um I think it was probably widely known and I basically assume that they probably had the numbers advantage and we had the technological advantage. Although I’m not sure

that's true in every case. Um, they have some things we still don't have and that's the mobile missile.

SB: Um hmm.

TP: So, ...

SB: In terms of an ICBM mobile missile?

TP: Right. But those were, those were things that were not really relevant to the job that I did and really did not have any particular reason to know or, you know, be involved in that kind of stuff. Um, an organization in the wing, I think it would be DO-22, for example, was the Plans and Intelligence. And those people would certainly know much more about that, just even as far as specific targeting and so forth. But a lot of this information is really compartmentalized in part because there was so much, no one could know it all. And also in part because there was a lot of "need to know."

SB: And by "need to know," would you explain that phrase?

TP: Okay. "Need to know" basically means that if information is sensitive, that it should not be shared unless that person has a need to know for their job. Or to do the job. And that's just good security practice. Um, they had what we called elements of friendly information. And that's where an adversary is able to take seemingly innocent pieces of, whether it would be troop strength or just little snippets that they might pick up in a bar. Or on the street corner. Or from the hairdresser. Or wherever—down at the restaurant—and try and put together a picture of the, of the force strength or the condition of the force. Something that might give them some intelligence information that would give them an advantage. And back then, that was COMSEC—Communications Security—all this kind of stuff, was something that we heard about and heard briefings on because this was a very real threat.

SB: You know, I want to get back to that question about a sense of the quality of American weaponry. In World War II as an example soldiers in the European theater believed that the German anti-tank weapon, the *panzerfaust*, was superior to the American bazooka and as a consequence would through their bazookas and take the *panzerfaust* any chance they could get. So I, what I'm wondering is, was there, did you get the sense that people involved in the missile business really had faith in the quality of our weaponry? Of our missiles?

TP: Good, good question. Um, I would say for the, for the most part they did. Um, I've heard other people say that, nah, they probably wouldn't have

- gone off. Or they would have, you know, fizzled off part way there, or. You know, you really don't know? Um, I guess the bottom line is the mission was deterrence and whether or not they worked or not is a moot point because ...
- SB: Because they never flew.
- TP: ... they could do their job without ever having to fire a shot.
- TP: Did you ever get to witness a test flight of a bird?
- TP: No I didn't. Not of a Minuteman. I have seen an, an Atlas or two. Um, and, and they did do some what they called FOOTE shots, or "follow on testing and evaluation" [follow-on operational test & evaluation] of the missiles. And that did involve pulling a, a missile, supposedly at random through some process, from the inventory out in the six bases.
- SB: So they'd actually extract one from a Launch Facility?
- TP: Right. Um, let that base's crews transport it to Vandenberg Air Force Base.
- SB In California?
- TP: Right.
- TP: Where they would instrument it, put a destruct package on it, and then launch it. And use that to evaluate the reliability of the system. And I've heard various stories about the successes and non-successes of those missions, so, you know, depending on who talk to, they may say "Oh yeah. They all would have worked." And the other one will say "Well, based on what I saw, you know, they never would have worked."
- SB: How'd that effect morale?
- TP: Uh ...
- SB: How would you assess morale?
- TP: I thought, very good. When I came to work out there, I was impressed with what I felt was the, the Air Force family atmosphere. And that people really, as a whole believed in the mission. And there was a real sense of teamwork, I guess, in accomplishing that mission. And so I thought morale as a whole was, was very good and I really felt like we were contributing something to the national security.

SB: So, then I'm curious how deactivation in 1991, the order, how did that affect the people in the missile business?

TP: Well, you know, in some ways it shocked, it was a shock. In other ways it wasn't. Because maybe we sort of knew it was coming. Um, in our case, we had maybe twenty projects on the books and a matter of a few million dollars. And actually projects that were, we had bid, had the money on hand and were ready to award, and they came down and said, you know, "Cancel the award. We're going to shut you down." And there was a sense of disbelief. Um, I think "What'll we do now?" A lot of people had basically devoted their adult lives to the missile business. And you know, it was, it was quite a shock to some. Obviously, we had a lot of work to do. And, and deactivation then became the focus. But it's interesting to me to have gone around to a lot of the capsules after the deactivation and to look at some of the graffiti that had been left on the walls. And that ranged anywhere from, you know, "good riddance" to much more commonly a sense of "mission accomplished, gone home." That type of thing.

SB: Um hmm. There had to be a sort of ambivalent felling. You know, on the one level, you've achieved your job. On the other level, job security becomes an issue. Is that something that you saw expressed? What am I going to do? Will I have to retrain?

TP: Well, I saw a lot of people it's not like the Air Force fires anybody. You know, through attrition people may have retired, a lot of them went to other missile bases to finish out their careers. Or a lot of them went on to the space business. Space Com, you know, was coming on line, so now it's the space and missile business where before it was sort of just the missile business.

SB: So while one door closed other doors opened?

TP: Right.

SB: Yeah.

TP: But it, it wasn't necessarily the same thing. Um, and to me it wasn't so much job security as I figured there would be a job. But it was more of a sense of loss of a, of a purpose. And and then the question about whether it was really the right thing to do. Um ...

SB: Well, let's ask that question. Was it militarily justified? Was this, how did you feel about pulling these four hundred-fifty Minuteman IIs?

TP: Well you know, there's, there's two ways to look at it. One is that, you know, we're just way at the bottom of the pile here and we don't know the

big picture, so you have to trust the policymakers. That's a pretty dangerous thing. But you know you have to assume that, that they knew what they were doing when they, when they traded these away in the START Treaty, or I shouldn't say in the START Treaty, but when they used them to fulfill the requirements of the START Treaty would be a better way of saying it. But on the other hand, you ask questions like, "Why us? Why not another base?" Or, you know, "What did we do to deserve this?" Or "Are the Russians doing the same thing?" Or "Is this really smart?" You know, "Are we are we going to need 'em again someday?"

SB: Well, how do you answer those questions?

TP: Who knows, but my guess is that, you know, we're not going to enjoy the relative peace we see between the superpowers forever. I mean we just sold a bunch of secrets to the Chinese here and so what's going to become of that? Now all of a sudden they have some of our technology. Is that going to be our next big arms race or missile crisis? I don't know. It's hard to believe in this unsettled world that this is ...

SB: You know there is a current debate right now as to whether we need to rethink the restrictions on anti ballistic missiles that have been in place with certain of our arms reduction treaties like the START Treaty, SALT II, INF Treaty, etc. What do you think about the ABM? Should we have/develop an ABM? Or should we not renegotiate the restrictions on them?

TP: Again, you know, I'm really not a student of that by any means, but it seems to me that maybe Pearl Harbor comes to mind. We sort of sat back fat, dumb and happy and weren't really ready and almost got beat before we even got started. And my concern is that we don't put ourselves in the same position. And so to me any kind of development like that can only serve our national interests because weapons of mass destruction are certainly becoming cheaper and more accessible. And just in the paper a couple days ago, we, I saw an article about the Russian stockpiles of nuclear material and how they may be much more vulnerable for sale and acquisition by people that we don't want to have them.

SB: Um hmm. Um hmm. Rogue states, rogue leaders.

TP: Yes, that's right. And, and you know, what, is it China selling these missiles? Or probably selling them to just about anybody? So it's probably only a matter of time before someone who we don't even think of—almost James Bondish type—comes up with an end-of-the-world type scheme and holds us hostage. The better we are, I think, prepared, that's just wise.

SB: Okay. From 1991 until the present, do sense any nostalgia for the Cold War? What I'm driving at was it seems there is a sense that there was one identifiable enemy, maybe two: the Soviet Union and the Peoples' Republic of China. But only the Soviet Union could lob missiles back and forth with us. So, you mentioned earlier an unstable world environment. Did you, was there a sense of nostalgia for the time when we had just one enemy?

TP: I can't speak for other people, but sometimes I think that. You know, maybe we can sleep better at nights for the time being, but when you look at where this may head, certainly the Soviet's were a, were a stabilizing influence. You know, they held all these people under their thumb. And of course, they knew what we had, you know? We knew what they had. And we kept each other at bay, I guess.

SB: Um hmm.

TP: So. Um ...

SB: Something about the enemy we know rather than the one we don't know. Um, Tim, was there psychological screening for people in your position?

TP: Uh, no.

SB: Um hmm.

TP: Um, we went through, you know, ah, job applications, interview and so forth. Um, there was a background check though. And, and I did have to get a, a secret clearance. And to what extent they went into your background, I don't know. But you know, I've been contacted with regards to other people getting clearances and, and they may, you know, they will, they talk to your friends and neighbors or old working acquaintances and try and get a feel, you know, for your dependability and your trustworthiness. You know, all those type of things that would go along with the clearance.

SB: You know several of the interviewees have mentioned that there was a sense of responsibility for their peers and their subordinates and even their superiors from the military side. From the civilian side, was there a sense that you were to look out for your colleagues and other civilian employees for the Air Force?

TP: Uh, not so much. But there was earlier in the program. Um, we were certainly aware of the two-man policy in the "no lone zone."

SB: Um hmm. You want to tell us what the "no lone zone is"?

- TP: Okay. Yes. The “no lone zone” applied to areas where there was either nuclear weapons or equipment that controlled, command and control equipment, for the nuclear weapons. And that, it basically meant that in a “no lone zone,” there had to be two people present, each of which was capable of detecting an unauthorized action that could, you know, jeopardize the security or, or, you know ...
- SB: Integrity?
- TP: The integrity of the system itself. The, the system that those folks were referring to was called the PRP System. The Personal Reliability Program.
- SB: Used to be the HRP, um hmm.
- TP: Yeah? I’m not familiar with that acronym.
- SB: Human Reliability Program.
- TP: Civil Engineering used to be under PRP, but it’s my understanding that they were pulled off of the PRP because it was a very costly program. And people would be taken off of PRP for going to the hospital and getting medicine for a cold that might make them drowsy.
- SB: Um hmm.
- TP: And so from a practical stand point, they probably felt that, that might be difficult. I’m just presuming here now, but difficult to administer for a civilian population, for example, that went down town to a doctor versus a base population that went to the hospital. Had their medical records and, you know, had a flight surgeon.
- SB: You mean the base hospital or dispensary? Is that, yeah.
- TP: Right. Right. So, I guess there’s a lots of reasons why they found that to be not really feasible. And so for certain operations, then the, the CE workers would then would have to rely on the wing folks for the the escort into those areas.
- SB: Um hmm. Okay. Tim, as a civilian, did you take orders from military personnel?
- TP: Um, yes we did. My immediate boss was a civilian, but in a sense we, we worked for the Missile Wing Commander. You know, there might be a few people in between, but our office was unique in that a lot of things sort of by-passed the normal chain of command. If the Missile Wing Commander

wanted something, he may just call us up and say, "You know, I've got this problem. Take care of it." So our office was rather small. There was only about seven missile engineering officers in the Air Force, at the base level anyway--six operational bases plus Vandenberg--so, you know that, that the typical CE Commander in the organization really didn't know what they did! And as long as we pretty much kept the missile wing satisfied, you know they sort of left us alone. And that's how it worked quite well. We had a short line of communication with our customers, so to speak and that enabled us, I think, to do a pretty good job of keeping them happy.

SB: Were you subject to military discipline?

TP: No. Not really. The, we were subject to the civil service system and, of course, there's a lot more protection for civilians than there are for the military, you know. You've seen that in the newspapers on, on how they prosecute, you know, military versus civilians for a variety of offenses.

SB: Okay. Um, a while ago we were talking and you mentioned some question that had arisen in your mind following the deactivation order in 1991. One of which was "Why us?" Why pull our, you know, missiles rather than those from another base? What was the Minuteman like to maintain? Was, would you call it a low maintenance, medium maintenance, or a high maintenance missile?

TP: Well ...

[end of side one, tape one]

[beginning side two, tape one]

SB: Okay, we're cued Tim. We were talking about whether the Minuteman was a low, medium, or high maintenance missile and missile system.

TP: Well, relatively speaking, it was a low maintenance system compared to the earlier liquid fueled Atlas and Titan. And, of course, that was part of the requirements for the design. Um, I understand in over the years, Ellsworth had a real good record for reliability. And we heard things like Grand Forks Air Force Base had a real problem with water intrusion. And so from one aspect, they were a high maintenance base because of the water leaking into the silos just due to the, their sites being located in the Red River Valley and a real high water table versus ours in mostly in Pierre shale, with very low water table levels. That was a, one of the aspects. But I also heard that because our missiles were the oldest and the guidance system was the oldest and the least updated, that we did a lot more what they called "can changes," which is the guidance and control set. So from that standpoint, they were a high maintenance

- missile. Now why they were never upgraded to a newer guidance system and you know, targeting system and so forth, I don't know. That's just one of those things that seem to have always fallen behind from the beginning.
- SB: Um hmm.
- TP: So on one hand I heard we were the most reliable. On the other hand I heard that we had to do an inordinate amount of can changes.
- SB: Which got expensive, time consuming?
- TP: Which was time consuming and expensive. But I also heard that, you know, for the dollar, missiles are pretty good bang for the buck!
- SB: To quote the Eisenhower administration term, yeah.
- TP: Right. Compared to you know, aircraft. Of course, each has its own strengths and weaknesses.
- SB: Okay. Um, anybody die or get seriously injured in the course of duty, line of duty while you were in the missile fields or working in the missile business?
- TP: I remember a couple of instances not specifically when, but I remember of a security policeman who got accidentally shot by his partner in the back of a camper, while out in the missile field.
- SB: And shot and wounded? Or killed?
- TP: Shot and killed. And I, I believe that was a weapons accident. I don't remember the specifics but I more vividly remember a helicopter crash that occurred. And uh, I knew the pilot of the helicopter and knew his wife, and uh, heard about the crash and for some reason I got this uh, premonition, of uh, do I know who was on board? And it turned out that I did. In that crash I think there was a total of seven people killed. And I know of one other helicopter crash preceding that.
- SB: Were these crashes at LCFs or?
- TP: They were, this one happened to be en route. It was near Bear Butte. And to my knowledge they never did determine the cause, but there were no survivors. So yeah, it happened.
- SB: So however the Minuteman, in your opinion, accomplished its mission, there, it was not without cost in terms of human sacrifice.

TP: That's, that's true.

SB: Um hmm. Okay. I want to switch gears a little bit here to some, what I've labeled environmental questions. You're a native South Dakotan spent most of your life here, grew up here, so for you, perhaps, coming to West River from Sisseton wasn't as big a change as it may have been coming to Ellsworth for people from Alabama or from, you know, New York. Um, but I want you to tell us a little bit about what the terrain is like in western South Dakota, what the missileer could expect in terms of weather, in terms of any hardships, or in terms of any benefits, that this area holds for them.

TP: Well, one of the drawing cards here depending on how you look at it, is the relative isolation. And the people that like to hunt or fish really enjoy their assignments here and often end up retiring here. The people looking for the fast life, the night life, the girls and so, and so forth I would suppose find this very boring and interminable assignment. And can't wait to get back to the big cities. So the missileer could expect to find a vast expanse of primarily open prairie here rolling hills described in the environmental literature as primarily Pierre shale, which is highly susceptible to wind and water erosion. So you see a lot of the terrain you might see on a, on a TV cowboy movie. And very often you can look from horizon to horizon and the most you might see is a power pole, if that, some places not even that. Um, you would expect to see normal northern tier weather. Northern tier would be an Air Force term for the bases situated towards the north part of the country, where we really have a winter, blizzards, wind chills that can be deadly. They would expect to drive out to the missile site over asphalt roads turning to gravel roads. In some cases, thirty-five miles of gravel, from civilization to the Launch Control Facility. Most of them are much closer than that. It would often be in weather conditions where you wouldn't want to be driving. Where the wind would kick up the snow where you couldn't see the front of your hood. In those cases, if they knew that was coming, of course, they would delay that travel. They would expect the wind chills of thirty, forty, fifty below, in the worst conditions. And summer heat of a hundred and ten degrees. So, really they could, you know, expect all of those extremes that might be very foreign to them. It was not just the weather but the gravel roads.

SB: Who maintained those roads?

TP: The roads were all county roads, with the exception of a short access road going up to the site.

SB: So the Air Force depended upon county highway personnel to maintain these roads?

TP: Right. And we had maintenance agreements with the counties and we also subsidized the counties in the maintenance of those roads. Through the transporter erector route system, which is part of Military Traffic Management Command Defense Access Road System, which I understand was sort of the, part of the interstate, and all of that process. So the federal government actually contributed, on generally a cost-sharing basis, to the upkeep and improvement of these county roads that allowed us to drive our transporter erector, a hundred and twenty, thirty thousand pound long, special purpose vehicle, like a big eighteen wheeler, that hauled the missiles from the base to the site. And we actually surveyed the roads to make sure they were right. Identified projects, then worked with the State Department of Transportation and the Federal Department of Transportation to improve bridges, re-grade, re-gravel and that kind of thing. So basically, the counties were, were subsidized or, enjoyed, I guess, this windfall profit of million and a quarter dollars a year, roughly, shared you know, in the missile field.

SB: And that's now gone.

TP: That now disappeared with the missile field.

SB: Uh-hmm.

TP: We also impacted them with electric power allocations. The Air Force had a large lot of power allocation, which allowed all the rural electric companies to purchase at this low rate. And the Air Force didn't use it all, so basically it ended up subsidizing the rural electric consumers' electric bills. And when missile field went away that went away too.

SB: That's something we might want to point out for our listeners, and that would be, who supplied the electricity to the LFs, to the LCFs?

TP: The primary, day in, day out power was provided by several rural electric companies, the same companies that served the farm or the ranch right down the road. Um, the system certainly had to have been upgraded considerably since the sites required rather tight tolerance, three phase power. And that also was a benefit for the customers, because I'm sure their level of service increased significantly with the installation of the sites. And the power companies then were under contract to provide that power and, of course, we monitored it in our site. And if it fell out of those tolerances we immediately found out, and may have to call them up and get them involved. In fact, that was one of the responsibilities of Missile Engineering, who I worked for, was to be the liaison between the Air Force and the power companies. So when we did have a commercial power outage, we would be the ones to call them up that could be at any hour of the day. We tried to establish procedure, where we would do it during

work hours so that we didn't get a stand-by up, guy up at two o'clock in the morning. But if the situation required it we would often do that and it was more than once that I would get a call in the wee hours of the night saying that there was a power outage.

SB: So if there were a power outage did a secondary generator kick in automatically to maintain electrical supply to these Launch Control Facilities and Launch Sites or Launch Facilities?

TP: Yes, the, the weapon system itself ran off of a motor generator that was located in the underground portion of the Launch Facility. And it normally got its power from the commercial power source. If the commercial power source dropped out, a Minuteman Power Processor, sort of a power monitoring computer would disconnect that from the site. And the weapon system would immediately come up on some emergency storage batteries that were also located below ground. In the meantime, a stand-by diesel generator would attempt to start and establish a, a stable power source. As soon as the computer sensed that power was available, it would transfer the missile to that stand-by diesel generator and continue to monitor commercial power and then when that became available and stable for a period of time, it would reconnect that and then disconnect the stand-by and/or the emergency power at that time. So the weapon system had really three sources of power.

SB: Redundancy is the key.

TP: Redundancy. Um, of course the emergency power was only good for a classified period of time. And the stand-by power was certainly secondary and you wouldn't want to count on that necessarily as a primary power. So if for some reason the secondary or the stand-by power wouldn't start, then that increased the urgency to get the commercial power back on.

SB: Uh-hmm. I want to get back to the roads for a second. Did they ever cause any problem in terms of bringing missiles or people or maintenance crews to a site? Or from a site?

TP: Oh, as you can expect the weather can turn the roads into a, a sheet of grease that would send you to the ditch in a hurry. And since a lot of them are gravel, it brought a lot of these people from the East, people from the city who'd never seen a gravel road, that presented a new hazard. A lot of us that grew up in South Dakota think nothing of driving seventy down the gravel road. But you stick some young airman in a big top heavy maintenance truck, and send him down a gravel road and he thinks it handles like his Camaro, or whatever, you know, he may be in for a rude awakening.

SB: Uh-hmm.

TP: And so that was a, a problem over the years. Obviously the snow and ice would create problems. And we did have an agreement with the, the State Highway Department for, what was called extraordinary snow removal. And, what that meant was in a certain situation, such as a missile movement, we could, according to this agreement, call upon the state to do some additional plowing or sanding to allow us to safely move that missile to the site.

SB: When a missile's moved to a site, is it moved armed? Or does the war head come separately?

TP: It comes separately. Before a missile is moved, removed from a site, the warhead and the guidance set are moved in a separate operation, and then the missile is pulled. And the reverse is true when a missile is in place, the booster itself is put in and then is armed later.

SB: Okay. Um, well, I want to ask some questions about relations with the people of South Dakota. You mentioned a number of, what I think could be interpreted as positive effects on the people of South Dakota. How would you gauge relations with those people?

TP: You hear various stories that you know, relationships were good and bad over the years. When the missiles were, when the missile sites, the land was originally purchased, a lot of people sold the land I'm sure with a sense of patriotic duty, and, you know, the government needs it I'll sell it to them. Then you see records of others, who were either greedy or really didn't want them there, and sort of put up a fight, and resisted, and caused trouble, whether it was justly or not, I don't know. Then you hear stories of, maybe heavy-handedness by a particular government agency who acquired the land. And so like anything else, there's probably several different stories and several different sides. But as a whole, it's been my experience that the people were very, very supportive. Um, we had probably certain individuals that are responsible for some of that. One of them may be Jack Anderson, who was in charge of Cable Affairs, and they were responsible for the fifteen hundred plus odd miles of HICS cable, or hardened inter-site cable system, the very cable that connected all of the sites. And they had somewhere around three thousand, I think it was, over three thousand gates and somewhat over two thousand easements, my numbers may be off, across private property. And so they were very much in contact with those land owners. And I think Jack did a lot. He was sort of the point of contact. If a landowner had a complaint about the Air Force, they may call up Public Affairs, they may call up the, the commander, but I think many of them called Jack Anderson. Then he

tried real hard to represent the Air Force credibly and treat the landowners fairly.

- SB: We've heard stories of landowners who have invited airmen to hunt on their land. We've also heard stories of ranchers who've had claims that cattle have been killed in accidents. Do you have any personal experience with either of those? Or do you know of any anecdotes like that?
- TP: No. As far as people hunting on the land, yeah, I know that a lot of the Air Force folks have found fishing holes out there, have developed some long-term relationships, have married, you know, into families out there. And so you know, although I can't specifically say somebody, certainly that has happened. Of course, the, the negative things tend to stand out more. And um, yes, I've had people call me up and say "Somebody stole some of our cattle or stole some tools from our house. Do you know who did it?" You know, "Were you there?" Or "Did you leave the gate open and let our cattle out?" And that type of thing. Um, but for the, for the most part I would say we've had relatively few problems and most people have been very good neighbors and the majority of the Air Force people have tried to be good neighbors in turn.
- SB: Okay. Um, how do you think the location of these missiles in South Dakota affected South Dakotans? You mentioned as a young man wondering what it meant when you heard the B-52s thunder off the runway. Can you share some other observations about that?
- TP: I don't know how much people gave it a thought. I, it seems to me in looking at the history of this, that this was one of those things that was decided in a very short period of time and basically they said "This is what we're going to do" and it was done. Um, these hundred and sixty five sites were built in just a little over two years. Ground-breaking occurred in September of '61 and by November of 1963, these hundred and sixty five sites were declared fully operational at a cost of fifty-six million dollars. To me, that's a mind-boggling undertaking when it has taken us ten years and eighteen million dollars, were not even done getting rid of the sites, and that doesn't include the military deactivation. So, something that happened that quick, you have to I guess, probably imagine the sense of national urgency there must have been. And with, you know, the Russians may be breathing down our neck, it was probably pretty clear to everybody that we had to do something. And, so, it was just done. Um, I've seen correspondence of individuals who said, "Yes, why did you put this missile site here? Why not over there?" Or, "I don't like what I'm being paid with it, or paid for it." But I can't imagine, well, I guess I can imagine, but I would say for the most people, for the most part, people recognized the need to do it. They just accepted it.

SB: Now how about those soccer dads that we talked about? And, you know, the idea that this represented the potential for nuclear holocaust?

TP: Well the people I've familiar with were young at that time. My age. And talking about the soccer dads um, at the soccer games, I, I talked to some people and we discussed what we did and, and I brought up the preservation of these missile sites. An almost without exception, people relate personal stories of where they were or what they remember of that era. And this one particular guy who's a doctor in town now, and he says, "I remember sitting down at the kitchen table with my parents and having a very frank discussion over what we should do with regard to this, the threat of nuclear war. Um, whether we should build a bomb shelter—the people down the street were building a bomb shelter. How we should prepare ourselves for this eventuality. Um, you know, most people my age remember the air raid drills, or where the air raid siren would go off and you'd have to run home from school or hide under your desk. And uh, or of the Civil Defense signs on churches, banks. And the cans of crackers and water, maybe in the school boiler room. Or something like that. So, you know, you know, almost without an exception, you mention that and you evoke a very vivid memory. And maybe it's, I don't know how big a range of age of people, but certainly people who were kids at that age have vivid memories of that time.

SB: Okay. Were there any demonstrations? By the against the missile sites? Or against the Air Force?

TP: Um, yeah, there were. Um, I believe on a regular basis some people from the Sioux Falls area, from the eastern part of the state came to the missile sites at Easter time to demonstrate. And unlike a lot of other events in the country, it was probably a very civil gathering where I understand they would announce their intentions and actually tell the Air Force that they would be coming. And the Air Force would inform them, of course, they'd have to be there to arrest them. And so, you know, the sheriff or the marshals and everybody was there to greet them and they'd crawl over the fence and put their Easter lily on the site and came back over and were arrested. And it was a form of social protest that was um, I think just probably accepted by both parties as something they, they had to do.

SB: And as you said, very civil.

TP: Yes. And you know, I think that's probably a pretty good testament to to the reason we had those things. I mean, to have a country where people are free to do that and voice their opposition to the weapons system that is really giving the right to express their opinions.

SB: Um hmm. Okay, Tim a couple other questions about living in South Dakota. Um, did you have occasion to encounter any of the fauna of South Dakota? Any animal experiences? Either at an LF or at an LCF?

TP: Not a whole lot. You know snakes were always a big thing. Snakes and spiders. And yeah, I've seen a couple rattlesnakes, but not a, not a whole lot of them. You know, we've seen lots of deer. I've seen some nice trophy deer out there. Antelope.

SB: Did you ever eat any rattlesnake at an LCF? We had an FM tell us last night that they cooked up rattlesnake on occasion.

TP: Oh, I ate some rattlesnake at the at the Boy Scout Jamboree in Pennsylvania in 1964, I think, and that's the only occasion I ever had to eat it. Um, one of the most interesting sites I've ever seen was when I was driving past the Mike Nine missile site, which is northwest of Belle Fourche. And I stopped along the road there and there was a carcass of probably an antelope. And here was, I think I counted thirteen bald eagles. And I've never seen that many in a group, but they were sitting on a stock dam almost like vultures, a few of them flying overhead. And then three or four of them just picking at the the flesh of this critter.

SB: Um hmm.

TP: And it was really quite a majestic sight to see that many of them there. You know, I've heard of people running into cattle and, you know, totaling a vehicle. We never hit any animals, but we come close to hitting a combine once. [laughter] And that was almost worse than a big bull in the road. But we were going out to Alpha One, which is that thirty-five mile stretch of gravel north of Quinn, South Dakota, or close to Wall. And it was toward the middle of summer and there's some really nice wheat fields up there. And the roads are very narrow and this particular stretch had a lot of rolling hills with real sharp tops and deep dips. So you couldn't really even see over the next one and we came over the hill and here was a, a combine that was taking up all of the road and then some. And fortunately there was a wide ditch where we could let him get by.

SB: Yea, that's something unique to the prairie and plains states, I'm sure! A couple of questions about race relations. How, were race relations a factor at all in the accomplishment of the mission?

TP: I have no, no personal instances where they were. All of the sites were on government owned land that had been either purchased from a land-owner or had been, the use of which had been acquired from another federal agency such as the Forest Service or the Bureau of Land Management. And so even though some of the sites were close to Indian

- reservations, they were not located on any of the reservations. So we just pretty much, to my knowledge, went about our business with, with really no thought of, of, race relations.
- SB: So no site was located on a Native American reservation.
- TP: That's correct.
- SB: Were access roads? Was it required to travel across Native land to service the sites?
- TP: Um, there's some, I'm not sure if up by Juliet it maybe clipped the corner. Yeah, if you, if you some of the, there were some back roads there where you would cross into ...
- SB: But as far as you're aware of, there were no tensions between tribal governments and the Air Force or the Federal government over the issue of nuclear missiles?
- TP: No. Not that I'm aware of.
- SB: Okay. Um, in terms of your own business, did you face any problems with equipment? With shortages of equipment? With supply? With quality control? Was there anything, any sort of insurmountable challenge?
- TP: No, not, not really. Um, having been involved in the construction business prior to coming to work for the Air Force, sometimes I wondered why things couldn't get fixed right away when, you know, in construction the boss says "Do it" and you figure out a way to do it. You know, for lots of reasons, one of them being configuration control, they don't want anybody just doing anything with the missile. You know, there were processes to go through to approve a repair if it was something that hadn't been done and so forth. So, that might take time. So sometimes I wondered, you know, why can't we just do something right now? Um, as far as shortages of equipment often you can use one more of something else, but that's nothing that any other business or agency doesn't go through.
- SB: Did you feel that the missile business got high priority from the Air Force? Any sense of second class citizenship as opposed to air crews and their needs?
- TP: Um, from the big picture, not necessarily. Um, from the base standpoint, it seemed for most of the time that the missiles were up, that they had the priority because the missile wing was the host wing. And, and then at the point when they became a tenant wing, there appeared to have, to be maybe some retribution that took place against the missile wing. Um, you

know, sort of maybe getting even for having for the flying wing having been second fiddle on the base for a while. The missile engineers, or the missileers at least in jest, although I'm sure it's seriously lamented the fact that they, they may have been treated as second class citizens. In fact at missile competition out in Vandenberg, which was an annual event where different specialties from all the six missile wings went out and competed. And come up with a winner and then they use that as a learning experience and cross feed for ideas and so forth. One of the entertainment activities out there was a group of former missile combat crew members who had, who had formed a singing group and had written songs ala Peter, Paul, and Mary, the folk groups, and of course, all the protest songs and so forth. And one of those songs several of them related the woes of missile combat crews, whether it would be the traveling. Um, "The Man Who Never Returned," um, you know from Chicago Transit Authority [*Boston, not Chicago: MTA*], or I forget the name, but about the guy that went out into the missile field and never came back. Similar to the popular folk song. There was another one about "the pilots get all the gravy, the missileers get all the grit."

SB: Um hmm.

TP: Which basically lamented the fact that pilots got the glory and the missileers ...

SB: So there was some good-natured rivalry between ...

TP: I assume so. And I don't know if it was always good-natured. [laughter] Certainly, certainly there was ...

SB: Rivalry?

TP: There was rivalry.

SB: Um hmm. Okay. Did you have occasion to do a rest over night?

TP: Yes I did. Um, it was not really a forced one in that particular case. Um, but we had put up what was a called a Masters of Missiles Program. And the missile wing commander put together a week-long program where all of the organizations within the missile wing had an hour or two or three or four hour briefing, so anybody new to the system could spend a week in this sort of organized, in-house schooling and learn all the pieces and parts of the, of the missile maintenance and support business. And I did the CE portion of it. And as part of the initial class, all of the program managers for that, you might say, or the people who did it, went out and taught each other. Sort of let's do it once to ourselves and critique each other and develop that program. And during that program, then, we went

out to India One and stayed over night and traveled out to a missile site in the dark of the night. The one particular site was one that you could drive by and not even see until you missed it. Go past and say "You know, it should be here someplace. Let's turn around and go back." And then from the other direction off the curve, you could sort of see where it's at. But very, very commonly, people would be forced to do that against their will, where if they were out and the road conditions turned such that they didn't feel it was safe, they would direct them to return to the nearest Launch Control Facility to remain over night. Um, often times, though, the radios mysteriously seemed to quit working about that time. [laughter] And people were able to continue their trip home and miraculously showed up on base. [laughter]

SB: Um, what was it like in an LCF from your perspective?

TP: In, in what way?

SB: At a Launch Control Facility. Did you you observed the personnel who were there. Um, you had a sense of what it was like to be there on that occasion. What were your feelings?

TP: Well, I think it was, it was primarily a lot of boredom for the people out there. Now I'm talking about the people top-side, not the people down in the capsule. But you had a cook and a Facility Manager. And the cook obviously had to provide three meals a day plus a fourth or fifth or sixth if people were legitimately out maintaining and came in late at night. The Facility Manager has specific lists of things to do, daily checks, and, you know, mow it, just sort of upkeep and so he could keep busy. The cops of which there were six of them there, a three-man night shift and a three-man day shift, were really waiting for something to happen, you know, which would normally be say an Outer Zone security alarm where they would be required to go strike that site. Or they may do some daily or weekly checks. But you can only do so much of that running around looking at nothing. So, they may play pool, they may watch t.v., they may read, they may just sit around and play basketball a lot, horseshoes. Um, there was an exercise room where, they could stay fit. I think probably boredom was the biggest challenge there. To try and maintain the sense of urgency while you were sitting around doing nothing.

SB: Being bored.

TP: Yep.

SB: Okay. Tim, I want to ask you a couple of other questions regarding survivability. Um, and while you were not directly, I suppose, concerned with this, the idea was that these Launch Control Facilities and Launch

sites, Launch Facilities, were supposed to be hardened in such a way that they could survive a near miss of a nuclear weapon or an air burst. Do you think that was true?

TP: I would assume in the early '60s there was some reason to believe that. Um, that was evidenced by, by how they were constructed. Um, some of the features of it, the missile itself was incased in a, was not incased, but was suspended in the launch tube, twelve foot in diameter, eighty foot deep. The bottom fifty feet of that launch tube was mined into the bedrock, and sort of cast in place against the rock that had been removed. The upper thirty feet was the head-works. And it was poured separately and there was actually some expansion joints that would separate the equipment room, the head-works of the door, of the launcher closure door and everything, from the launch tube itself. So that a, a blast could displace the upper portion without affecting the alignment of the missile. So there was some consideration to that in the design. From the capsule stand-point, there was the seven-ton blast door, the four-foot thick concrete walls, the capsule suspended on the air shocks so that it could bounce around in what was called the "rattle space" without feeling anything and protect the equipment and occupants. And then at the far end of it was an escape tube, which was a hatch leading to a corrugated metal culvert filled with sand that extended toward the surface at a forty-five degree angle and was capped off about five foot below the surface. And it was intended that after a, an appropriate period of time, after the war had been fought, that the capsule crew could, could open the hatch, dig the sand out, break through the surface and live to fight another day. So, obviously there was some expectation of this being survivable at the beginning.

SB: Is it possible that that reflected the psychological need of the crew to believe that they could survive?

TP: That, that could be. Um, you know, maybe that's leaning toward the conspiracy theory type thing. I would, I would tend to think that maybe there was a practical reason to believe that. Whether or not, with knowledge we have today, we think we would do the same thing today, I don't know. But, obviously, with all the air raid drills, the Civil Defense, and that type of thing, there was some thought, and I understand the Russians had a much more elaborate system of underground facilities where even some of the general populace survive the nuclear ...

SB: One of the reasons I asked that last question, about the psychological need of the crew to think that they were going to survive, was that the three capsule crew members that we've interviewed when asked, "What were your orders once you escaped from the escape hatch," said they had

none. Are you aware of any standard operating, or standard orders for them once they escaped through this escape hatch?

TP: No. No. To follow on, that perception probably may have changed considerably since the early '60s to now. As I said before, you know, the weapon accuracy was gauged by, you know, circular error probability, or how big an area you would expect an average weapon to hit in. And, where in the early '60s it might have been far enough from a site to reasonably expect to survive. As technology improved, that was much less likely. And that would probably be best demonstrated by a cartoon that was described to me as being on the wall of the school house at Vandenberg Air Force Base where these missile crews trained. And that cartoon depicted a blast crater from one of the large nuclear weapons. And in this crater was an aircraft carrier standing on its bow. And on the stern was balanced a little egg representing the Launch Control Capsule. And the caption under this cartoon was "If the blast doesn't kill you, the fall will." So that probably describes better than anything the realistic expectation of surviving a blast in this day and age. The other thing I have heard from crew members was jokingly wondering whether an incoming Soviet warhead would bounce off the walls of the elevator shaft as it came down, or would come through nothing-but-net.

SB: In, in reference to the increased accuracy?

TP: Right. So, you know, a question like that really has to be put in perspective of what was believed at that time ...

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SB: The expectations of the '60s versus the '80s and '90s.

TP: Right.

SB: Okay. Can you tell me your most humorous missile experience? Or most humorous experience during your time in the missile business?

TP: Boy, that's, that's a, that's a hard one. But one thing that does come to mind is, I had talked earlier about us maintaining the roads, and on one occasion the missile wing commander called up and advised us of a missile movement. Normally I didn't do that, but the guy that was in charge of that wasn't on. So I called up the county highway superintendent to explain the situation and said "Will you please sand the Highway 34 east of Sturgis because of this missile movement." And he said, "Well would you like me to sand the, the ditches as well? Because that's where you guys very often drive."

SB: That expressed confidence in your ...

TP: Right. And, and obviously that refers to the people from back east who maybe over-drove the conditions or weren't particularly familiar with our ice and snow out here and may have ended up in the ditch. Certainly exaggerated, but, a perception that was interesting.

SB: Any, any legends? Um, we've had reference to ghosts in some facilities. Anything in particular that you want to bring up?

TP: Well, I've, I've heard of ghosts at the site. I've heard of UFOs in the sky. I've heard of lights. Um, I've heard of cops placing rocks and so forth on top of the support buildings in just a particular way so that the security system would set up. A lot of stuff that has really no scientific proof but obviously somebody along the way suggested this and became part of the ritual out there.

SB: Um hmm.

TP: In, with regards to the Outer Zone security system, that was the system of, at that time, some radar antennas and transmitters arranged in a triangle that would have to set up before you could leave the site. And when you locked up the site, you would have to sit and wait for that reset they called it. And if you were lucky, it would take twenty minutes. Sometimes, thirty, forty. Sometimes, it wouldn't set up. And on some particular sites, they might, somebody figured if you'd make a pile of, I don't know, four, five, or six rocks in this particular place here, then that would allow it to set up. So, although I've heard of lots of those things, I don't have any specific one that I can relate.

SB: Um hmm. Okay. What would you say is your best memory of your experience in the missile business?

TP: Probably the best memories are, are really of Vandenberg Air Force Base and that missile competition. I don't know if you remember when you were a kid, and maybe you went to the State Basketball Tournament?

SB: Um hmm.

TP: And the sense of ...

[end of side two, tape one]

[beginning side three, tape two]

SB: This is Professor Steven J. Bucklin of the University of South Dakota Department of history. I am conducting an interview with Tim Pavek, p-a-

v-e-k, on the twentieth of May, 1999. We're at the Hotel Alex Johnson in Rapid City, South Dakota. This is the second of two tapes, side three. Tim, we were talking about the competition at Vandenberg Air Force Base in California.

TP: At that competition, each of the bases put together a team, from the launch crew to maintainers to cops to civil engineering and communications. And they went out and competed for the Blanchard Trophy. And so there were six wings that competed. And this was a real big deal. It was an opportunity to show you were the best, to hone your skills, the individual skills to develop new procedures and so forth. And the teams all went out there for this three or four day competition and to see the excitement, the camaraderie, the competition, the mascots, the team spirit, the patriotism, it was a real moving experience to see all those people that were dedicated to preserving the freedoms that we hold dear here. And I had the good fortune of going out there three times and probably I went out as a competitor the first time, and went out as a trainer the next two times. And on all three occasions we won the best Minuteman CE team. But my happiest moment was when the teams I coached, or trained, actually won sort of the "best-of-the-best" so to speak.

SB: Um hmm.

TP: And to see that sense of accomplishment and so forth. And while that isn't, you know, directly related to the mission itself it, it was very meaningful to a lot of the crews.

SB: You seem to be describing a sense of mentorship here and I think I've heard that before from several of the other subjects of the interviews. Do you think that was common? That the people with experience mentored their incoming personnel? The incoming airmen? The incoming airwomen? The incoming civilians?

TP: Um, without a doubt. And, of course, that's the military system. You come in as an airman and you work up the ranks. And you know, it's the supervisor's job to do that. But of course there was people that go above and beyond their job. As in anything else, there's people who are especially good at caring for the people that they're in charge of and there's others who are more concerned with what they can get out of it. And I'm sure that if you talked to a lot of the missileers, particularly the ones that had been in for a long time, and they did have very much a sense of it being their system. And passing on those responsibilities to the next generation. And equipping them as best they can and guiding them to ensure that what they started, you know, continued in the same fashion.

SB: Do you have any, um, less positive memory? Is there a worst memory?

TP: No. You know, nothing pops to mind. You know, if it was a breach out, one that was always interesting, you never knew what was going to come up. Certainly, there had to have been some bad times, but I don't remember them. But I guess the sense of purpose and accomplishments sort of, you remember the good times and, and not the bad.

SB: So what was the most significant accomplishment?

TP: Well I, I think the fact that we won the Cold War in a sense was the ultimate accomplishment. And you know, that sounds sort of grandiose on an individual scale, but I think that's part of that feeling of team-work that went along with the, with job. That, sure, it was just a tiny little piece, but as an organization, as a wing, as an Air Force, as a country, that that was the ultimate accomplishment.

SB: So did you go out, Tim, and witness any of the, I want to call it spiking of the silos, I'm not sure if that's the right term, but did you go out and watch the extraction process and the closing down of the LFs and the LCFs?

TP: Yeah. I was really quite involved in that. Early on, I was part of the team that actually wrote the procedures to close those down. And the wing put together a deactivation working group that wrote an, an actual technical order and—SAC CEM, or Civil Engineering Manual—that went step-by-step “How do we shut this down?” So, we wrote it, we went out and did the proof on that, you know, did it to make sure the procedures were right. And then once the process got under way, sort of stepped back because then we would look at what comes next. But I was also involved with buying the sites from the missile wing. The missile wing had a ten-day deactivation schedule. And then Civil Engineering took it over and we had a five-day schedule. At the end of our five days, then, we sort of shut out the lights, locked the doors, so to speak, awaiting contract dismantlement. And then my office and, and me in many cases, actually signed for that site from the missile wing and took custody of it so to speak.

SB: When you mention contract dismantlement, did you contract with civilian firms to dismantle these? Or was it done through military?

TP: The contract was eventually awarded to a civilian contractor. The design was begun by the Air Force and then was given to the Corps of Engineers to administer as a Corps construction project. We were involved in the, the plans and specification development and then the primary construction management, finally designed a construction manual, but it was handled by the Corps of engineers with our office being the Air Force, the Ellsworth Air Force Base, representative to that contract.

SB: What happens to the boosters when they're extracted?

TP: The missiles, as I understand it, the boosters were shipped off to Hill Air Force Base. And they did build some special storage where they are being kept for follow-on use in either, possibly some small satellite launches or test programs. Things like that. So, as I understand it, they will be utilized for follow-on space programs.

SB: And the warheads?

TP: The environmental or the environmental impact statement said they were all sent to the Department of Energy laboratories where they would be either stored or dismantled.

SB: Okay. Well, I guess in conclusion I'm curious about what you think about the preservation of Delta One and Delta Nine as a national park.

TP: Well, I think it's just a great idea, and I think it's really important. First of all, this is an area of history that affected a lot of peoples' lives you know, a couple generations, depending on how you look at it. The Cold War lasted, you know, roughly fifty years, forty years, depending on how you count it, forty plus years. Um, and, and, a lot of people have lots of memories. There's a lot of people that don't know the role the missiles played in it. And I think that is one important thing that historic site can do, is one, preserve the memory of the Cold War for those who did not experience it and put that in historical perspective. And possibly in the present or future perspective as well. And then look at the role the Air Force and, in particular, missiles played in the deterrence and in winning that Cold War. I think that's just a real important story to tell and I'm just very appreciative that we have come this far in these preservation efforts and are this close to wrapping it up.

SB: Did you ever take your children out to see a site?

TP: Yes. Yes, I have. And they don't have the same feeling for what happened there as I do. I would expect, though, that when the visitors' center, the Park Service puts together their visitors center and some of the displays and some of the videos, we're in the video age and I can't help but think those videos might have an impact and try, and would to some degree give them a feeling of what happened. But I don't think there's any way to duplicate those or instill those childhood memories or feelings in people that didn't experience it.

SB: Do you think that we should aid the CIS, the Commonwealth of Independent States, otherwise commonly called Russia, in developing a similar historic site?

TP: I would have no opposition to that at all. I don't know how possible or how receptive they would be. Under the START Treaty I believe they have that opportunity. One of the things that come to mind, is, how many people would be able to get to see it as opposed to here? And when you look at how mobile we are, how much money we have, how free we are to travel, vacation time, where over there people are fighting just to put food on their table. Because of a lot of this, we're able to make this museum and able to take vacations to come and see it. I guess that just only emphasizes how fortunate we are and why this thing is so important.

SB: Um hmm. Then my concluding question is, are there any questions I haven't asked you that you would like to speak to?

TP: Oh, I'm sure given time I could fill up the rest of the evening. One of the memories I have is being at the last site that the Air Force deactivated and buying that. By that time we were getting ready for dismantlement and I had been very busy and was trying to scavenge or salvage equipment to preserve Delta One and Delta Nine because we knew that a lot of this equipment would become unavailable after the deactivation. I tried to put together some spare parts that would assist us in keeping the site going for a long-time in the future. And one of those items was a sump pump. At the bottom of the eighty-foot hole was a single sump pump. Very unassuming. Not very important. But that's what kept the missile from getting wet. And that was one of those things that could cost the commander his career, if the missile got wet. So I had, because of my busy schedule, had put off salvaging some of these and right at the end, I tried to get a couple of them. I was in the bottom of, I want to think, now I think it was Lima Seven pulling this sump pump out of the bottom and eighty foot above me, I watched as this ninety-ton launch enclosure door was jacked shut. And it reminded me of an eclipse of the sun as the full circle started to shrink to a crescent and then finally a sliver. And then at the end I heard the door just sort of roll into the detents and sort of clang shut. There was sort of a finality ...

SB: Finality ...

TP: of it. And to think that, you know, I was in the bottom of the last hole and watch that launch enclosure door close that was you know, maybe a little symbolic of what was happening. And so that was really quite a vivid memory.

SB: I think that's a great way to conclude. And I want to thank you, Tim Pavek, for your time, for your memories, and all the effort you've given for this project. Thank you!

TP: Thank you.

[End of interview]